

# Tennessee Energy Division

Department of Economic & Community Development



2006-2007



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## ***Energy Division Background***

The Energy Division operates as the lead state agency providing and promoting the most efficient and economical use of energy in Tennessee. The state legislature established the Energy Division under TCA 4-3-704 to administer the federal grant programs previously administered by the Tennessee Energy Authority (TEA) and to oversee preparations related to energy emergencies. The legislature also gave the division responsibility for collecting and analyzing data on the availability of various energy resources within the state.

Originally organized as an emergency planning office, the TEA managed the state-wide allocation of motor fuel during the Oil Embargo of 1973. These activities resulted in the development of the State Set Aside Program that continues to be a major responsibility of the division in the event of an energy emergency. In 1983, the state legislature transferred the TEA roles to the Department of Economic & Community Development establishing the Energy Division.

Since its establishment, the Energy Division continues to manage a wide variety of federally funded, energy efficiency-related programs designed to optimize the efficient use of energy. Under ECD, the division provides economic support for small business profitability, lower costs for local governments and energy security by reducing energy inefficiency. The division's successful grant awards come from funding by federal distributions and opportunities under the U.S. Department of Energy, the Petroleum Violation Escrow Fund (PVE), and the US DOE Special Projects Grants, US Environmental Protection Agency and others.

Energy efficiency programs operating during Fiscal Year July 1, 2006 through June 30, 2007

- Local Government Energy Loan Program
- Small Business Energy Loan Program
- Biodiesel Infrastructure Grant Program
- Main Street Lighting Grant Program
- Tennessee Energy Education Network
- Grants Management Program
- Industries of the Future
- Public Outreach
- Energy Emergency Planning
- Clean Cities

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# **Local Government Energy Loan Program**

## **The Local Government Energy Loan Program**

The Local Government Energy Loan Program was started in late 1991. It is similar to the Small Business Energy Loan Program in that it offers low interest loans to municipal and county governments to improve the energy efficiency of local government-owned buildings such as courthouses, administration, maintenance and emergency response facilities and schools.

The program makes loans for energy efficiency retrofits. Loans are made for up to \$500,000 for each county or city government. These loans are 0% interest for Tennessee Three-Star communities and 3% interest for non Three-Star communities. This program also provides free energy audits to identify needed energy efficiency measures.

### **Eligible buildings include, but are not limited to:**

**Courthouses**

**Jails**

**Libraries**

**Fire Halls**

**City/County Administrative Buildings**

**K-12 Public Schools**

**The total outstanding loans as of June 30, 2007:**

**51 loans**

**\$7,575,975 loan funds outstanding**

**The savings per year on all outstanding loans is \$3,856,770. Life of the measures is 15 years, thus total energy savings realized is \$57,851,550.**

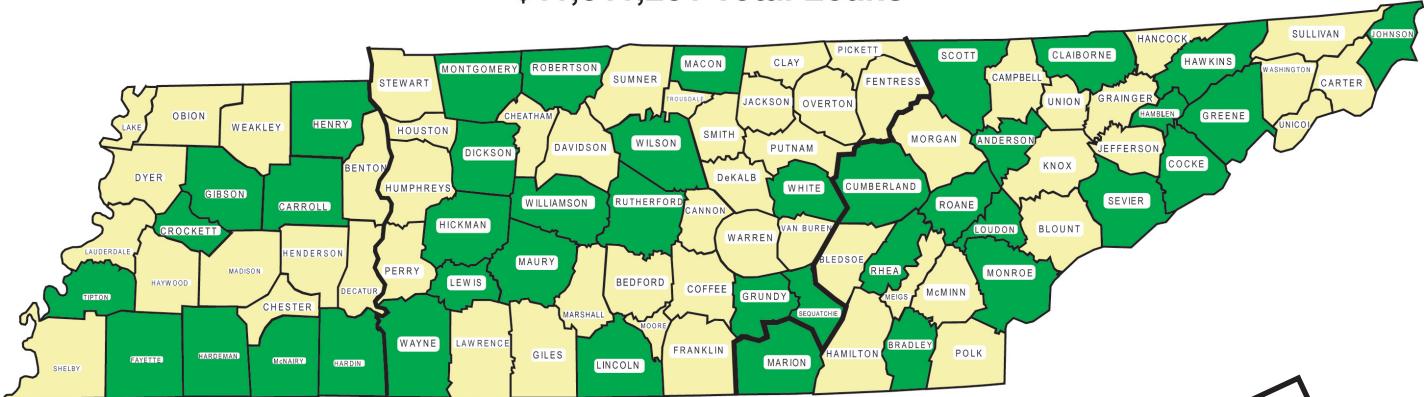
**From 7/1/06 thru 6/30/07 a total of 13 loans  
were made for \$3,511,995.**

### **Energy Audits performed:**

	25 Local Governments	46 buildings
	11 School Systems	36 buildings
<b>Totals</b>	<b>36 Institutions</b>	<b>82 buildings</b>

Total Sq. Footage Audited	<b>3,642,441</b>
Total Project Cost for identified energy measures	<b>\$9,355,639</b>
Total Energy Savings identified in Energy Audits	<b>\$1,246,127</b>

## Local Government Energy Loan Program (Tennessee Counties with Active Loans) \$11,811,281 Total Loans



**The Town of Rogersville** in Hawkins County applied for and was granted a 0% interest loan of \$336,000 to install new HVAC equipment, ceiling & attic insulation and caulking & weatherstripping in the Hale Springs Inn, which is an old bed and breakfast establishment and owned by the town. These retrofits will save approximately \$25,000 per year in energy costs and will realize a positive net present value of over \$100,000 over the next 20 years. This energy program also works in conjunction with the Tennessee Three-Star Program of which Hawkins County and the Town of Rogersville are members.

**Cleveland City Schools** in Bradley County applied for and was granted a 0% interest loan of \$500,000 to replace HVAC equipment and install automatic controls in Arnold Memorial Elem. and Cleveland High School. The annual energy cost savings for the school system will be \$157,600 per year. These measures have a 15 year life, which will result in approximately \$2.3 million in total energy cost savings. This energy program works in conjunction with the Tennessee Three-Star Program of which Bradley County and the City of Cleveland are members.





## ***Small Business Energy Loan Program***

### **The Small Business Energy Loan Program**

was developed to help private sector companies increase energy efficiency, upgrade equipment, retrofit buildings and improve operations. The loan program is a revolving loan program available to existing Tennessee small businesses of less than 300 employees or \$3.5 million in annual gross sales or receipts. Eligible and approved applicants can get a low or -0%- interest loan of up to \$300,000 and repay it over a period of up to 7 years.

Applicant businesses located in a designated Three-Star community are eligible for a zero percent interest loan and all others 3%. Loans must be used for energy efficiency-related projects on existing structures that are at least one year old.

Loans may be used to purchase and install one or more of the following energy efficiency measures:

- Insulation, caulking, and weather-stripping
- Storm windows and doors
- Multi-glazed or specially coated windows and doors
- Automatic energy control devices and systems
- Energy efficient heating and air conditioning equipment and system components including heat pumps, furnaces, utility plant and distribution system modifications
- Solar heating and cooling, cogeneration and energy recovery systems
- Energy efficient lighting and lamps
- Other measures that have documentation to show energy savings or reduced energy demand.

Cumulative totals from program inception 1988 through June 30, 2007:

<b>399</b> applications requesting	<b>\$19,277,149</b>
311 have been approved for	<b>\$13,382,583</b>
and 259 loans have been closed	<b>\$10,353,515</b>

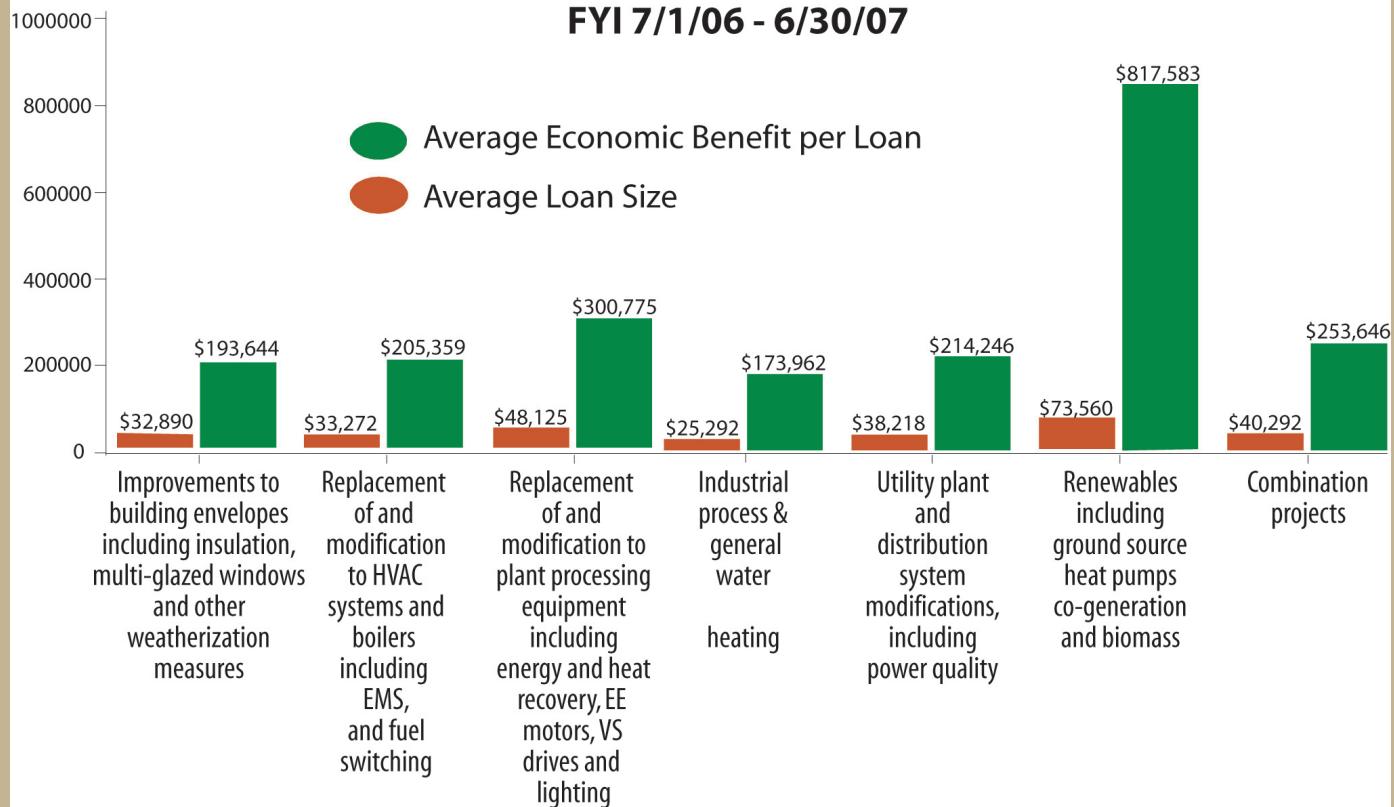
Loans have been made in **60** of Tennessee's **95** counties.

Cumulative energy savings	<b>\$25.5 million</b>
and economic impact	<b>\$113.1 million</b>

These savings, and associated economic impact, translate to approximately **\$2.15** and **\$10.41** per dollar lent, respectively.

**The chart below shows the average economic benefit of various combinations of energy efficiency and conservation measures**

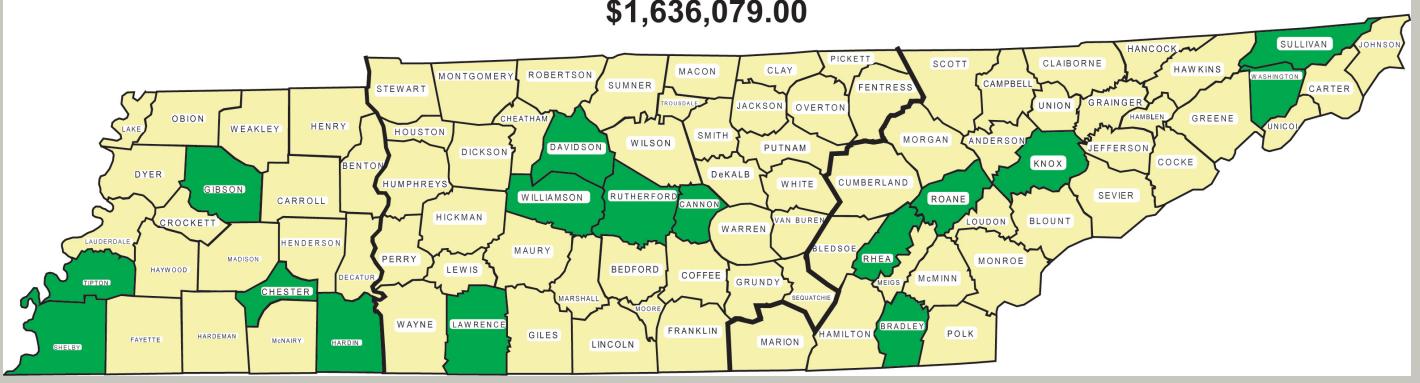
**FYI 7/1/06 - 6/30/07**



### Small Business Energy Loan Program

(Tennessee Counties with Active Loans)

**\$1,636,079.00**



## BUSINESS AND INDUSTRY TECHNICAL ASSISTANCE (ENERGY AUDITS)

The program provides Tennessee businesses with **free** technical assistance/ energy audits. Trained energy engineer/ auditors visit each client's facility and identify things that can be done to save energy or reduce energy demand.

During the 2006-2007 State Fiscal Year:

- 87** Small Business Energy Audits were performed
- Approximately **1,487,751** square feet of building space audited
- Projects costing approximately **\$3,634,461**
- Estimated savings - **\$807,239** in energy costs annually

### Zero Percent Interest Energy Loans Available

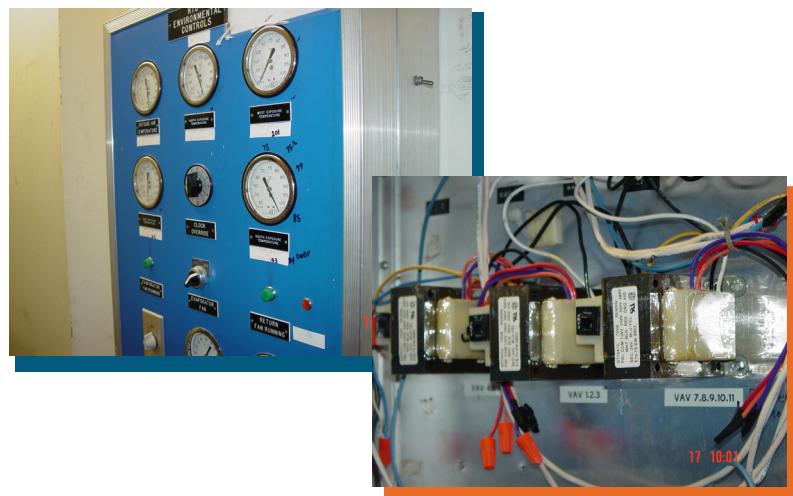
Zero percent interest loans of up to \$300,000 are available for energy efficiency projects. Qualified Tennessee small businesses in Three-Star communities with less than 300 employees can apply for the loans to improve their energy usage and reduce energy costs.

A small graphics design sign company in Savannah borrowed \$95,460 to install energy efficient lighting and air circulation fans. Their annual savings is approximately \$33,400.

- Average loan \$43,031
- \$10.4 million in loans
- \$113.1 million in Economic Benefits

### Free Energy Audits

Available to help firms identify areas of energy savings. One untapped use for the loans is replacing old, inefficient production and processing equipment with new, energy efficient state-of-the-art equipment. Loans can also be used for energy efficient lighting, HVAC equipment and motors.



## ***Biodiesel Infrastructure Grant Program***

The program provides grants to each Tennessee county government for the purchase and installation of biodiesel tanks, pumps and card readers to be used for fueling biodiesel vehicles in those communities. Three-Star communities qualify for 75% grants and non Three-Star communities qualify for 50% grants. Under this program the maximum grant to any county is \$12,000.

**McMinn County Schools  
received a grant for \$12,000.**



## ***Main Street Lighting Grant Program***

**The program provides matching grants not to exceed \$20,000 for the purchase and installation of exterior lighting retrofits for the original 15 Main Street Programs in Tennessee.**

**Grant funds can be used for energy efficient:**

- street lighting
- park lighting
- traffic lighting

**Main Street Cleveland and Fayetteville Main Street each received grants for a total of \$27,296.00.**





# Tennessee Energy Education Network

## The Tennessee Energy Education Network

(TEEN), for more than twenty years, has been a leader in promoting energy education in Tennessee schools. TEEN has received many distinguished service awards on the program and services. We are committed to teaching students the importance of energy efficiency so they can make wise energy choices in the future. We realize the choices they make will impact the communities in which they live.

The program entails several hands-on elements including entertaining and informative classroom presentations, teacher training filled with energy information and classroom ideas, interactive materials for students and the classroom, and a bimonthly newsletter highlighting energy related activities, resources and workshops for educators in the state.

Two annual promotions are "Energy Awareness Month in October and the National Energy Education Development Program. Students and teachers across the state are encouraged to conduct energy education activities and projects in observance of these events. During the month of October, the Governor issued a proclamation observing Energy Awareness Month. Students were encouraged to participate in our annual bookmark and placemat contests. This year's themes were "Alternative Fuels" and "Energy: We Can't Live Without It." Winning entries are printed and distributed during Energy Awareness Month.

Forty teachers from across the state participated in our biannual Energy Camp held in Jackson, TN. The camp was enlarged to accommodate this group because of an overwhelming response by teachers to attend the camp. Teachers participated in a two-day energy enriched program filled with energy information, activities and materials to use in the classroom.

All certified Three-Star communities were eligible for a \$500 grant to conduct energy education activities in a community school. After successfully completing the activities and accumulating ten points provided an opportunity for an additional \$1500 grant to purchase Energy Star approved products for the school. During this fiscal year, the following communities participated in the program-Town of Huntsville, Wayne County, County of Obion, City of Crump, Bedford County, Hamblen County, Coffee County, and Warren County.

*Five Tennessee schools were selected to participate in a project sponsored by the Energy Division in coordination with the Tennessee Valley Authority. The project established Clean Energy Technology Education sites at Morgan County Career and Technical Center, Alvin C. York Institute, Scott High School, Campbell County High School and Centennial High School. The goal of the project is to educate the staff, students and community members about clean energy resources, energy efficiency and conservation.*

**Over 39,000 pieces of materials were distributed free to Tennessee Teachers for use in their classrooms by the Tennessee Energy Education Network.**

### TEEN Program Participation July 1, 2006 - June 30, 2007:

Pre-service/In-service Workshops .....	627
Classroom Presentations .....	5,549
Special Presentations .....	1,266

**TEEN provided a total award of \$100 to students with energy related projects in four regional science fairs.**

# WINNERS!!!

## 2007 NEED Competition Winners

**TWENTY-TWO SCHOOLS participated in the NEED Youth Awards for Energy Achievement competition.**

**Tennessee received national recognition with Huntingdon Primary School selected the National Primary School of the Year for three consecutive years. Baileyton Elementary School & Mountain View Elementary School also received national recognition as the National Rookie Junior Schools of the Year. Representatives from the winning schools attended the NEED conference and award ceremony in Washington, DC.**



National & State Primary School of the Year  
Huntingdon Primary School Huntingdon



National Rookie Junior School & State Junior School of the Year  
Baileyton Elementary School Greeneville



National Finalist Junior School & State Junior School of the Year  
Mountain View Elementary School Etowah

Maria  
First Place  
8th Grade



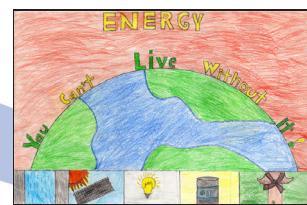
Dawn  
First Place  
7th Grade



Katie  
First Place  
6th Grade



Lukas  
First Place  
3rd Grade

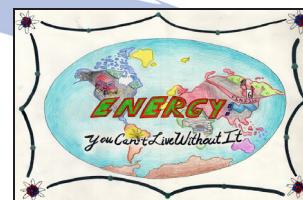


Joshua  
First Place  
4th Grade

2006 Tennessee Education Network Bookmark Design Contest  
"Energy: You Can't Live Without It"

2006 Tennessee Education Network  
Bookmark Design Contest  
"Alternative Fuels"

# WINNERS!!!



Karen (Ke)  
First Place  
5th Grade



## **Grants Management Program**

**Grants Management** - The primary objective of this program is to maximize the technology transfer and energy savings potential of the State Energy Program (SEP) grant, Petroleum Violation Escrow (PVE) funds, and other competitive grant funds through program planning, management, and implementation of the program monitoring function. The program monitoring responsibilities include tracking the accomplishment of budgeting goals and milestones against baselines established in the state plan; identifying and analyzing program accomplishments or problems; developing and initiating corrective action; analyzing performance of contractors, subcontractors, and sub grantees in regard to contract provisions; and tracking corrective or follow-up activity.



### **GRANT PROGRAM APPLICATIONS**

**(FY-7/1/06-6/30/07)**

In the past fiscal year, the Energy Division has applied for funding from a variety of sources. In addition to the annual formula funding that supports the State Energy Program (SEP), the division has also applied for competitive awards through DOE Special Projects, the EPA, and Omnibus funding. The categories of funding range from Clean Cities, Industries of the Future (IOF), education, building codes and standards, wind energy resources, and other topics related to energy and energy efficiency. These applications amounted to over \$1.66 million and leveraged funds from alternative sources amounting to \$630,000. Of these totals, the Energy Division has already been awarded over \$1.4 million (leveraging over \$400,000) with one competitive grant application still pending.

In addition to the annual formula funding that supports the State Energy Program (SEP), in FY 06-07 the Energy Division received a \$15,000 Omnibus funding award. The award is for DOE's Wind Powering America initiative and provides for a Tennessee wind outreach.

# Tennessee Industrial Technology Program

The Tennessee Industries Technology (ITP) Program follows the National Mission of the US Department of Energy, Office of Industrial Technology.

The program strategy develops partnerships with the core energy-intensive industry sectors (agriculture, aluminum, chemicals, forest products, glass, metal casting, mining, petroleum, and steel) to reduce the energy intensity and materials required for manufacturing. The bottom line results improve energy efficiency, environmental performance, and productivity.

**Industries of the Future** partnership efforts are to improve the energy requirements in the chemicals and metal casting industries. ECD partnered with the Industrial Assessment Center (IAC) at Tennessee Technological University to assist companies like Eastman and Lodge Manufacturing increase energy efficiency, control costs and improve processes. The IAC provided eight (8) targeted assessments to Tennessee industries in 2006-07.

## Save Energy Now National Campaign

ECD/Energy linked the DOE national campaign through outreach and marketing, made available to industries that consume 1 trillion or more btu's.

DOE offered free assessments provided by energy systems experts during 2006-07 to six (6) companies in Tennessee.

Manufacturers:  
Lower Your Energy Bill



## Best Practices Energy Assessments/Workshops

During 2006-07 six (6) workshops were offered throughout the state focusing on specific energy systems in industrial plants. They included steam, compressed air, industrial lighting, and boiler/chillers systems.

Each workshop's host company received a free targeted assessment.

Information was shared in the workshop about the findings and how best practices can be applied.

## Technical Webcasts & Software Tools Assist Industries

Tools for evaluating industrial energy systems on site were made available to industries through ECD Energy Division Office and the United States Department of Energy. DOE also sponsored periodic live webcasts presented by industrial energy efficiency experts. The archived webcasts were made available through a link on the Energy Division's website.

# Public Outreach

**Public Outreach** - The public outreach program has made available to small businesses, local governments, and residential energy users a series of measures that can help them to make informed energy decisions. The measures included self-help publications that contain current information on energy data and practical energy conservation techniques and technologies, a toll-free energy hotline and information center for energy information and direction for energy conservation. The Energy Division's website has several links to further inform the public on energy efficiency and conservation measures.

The screenshot shows the official website of the State of Tennessee, specifically the Department of Economic & Community Development (ECD). The top navigation bar includes links for ECD Home, Business Development, Business Services, Community Development, Technology Development, Administration & Policy, Energy Division, and Communications & Creative Services. Below the navigation is a menu bar with links for Home, Small Business Energy Loans, Local Government Energy Loans, TN Energy Education Network, and Contact Us. On the left, there are two 'QUICK LINKS' boxes: one for 'QUICK INFO' containing links to FAQ, Energy Annual Report, TN's Energy Policy, Energy Links, and Energy Emergency; and another for 'QUICK LINKS' containing links to Energy Star, Clean Cities, Tennessee Industrial Technology Program, Renewables, Public Outreach, Biodiesel, and Infrastructure Grants. A search bar is also present. The main content area features a 'Public Outreach' section with text about targeting small businesses, local governments, and residential energy users. It mentions the Small Business Energy Loan Program, Local Government Energy Loan Program, and TN Energy Education Network. It also discusses the Outreach Program's role in assisting residential consumers. A 'CALL FOR ENERGY SAVINGS & ENERGY CONSERVATION INFORMATION' box with the phone number 1-800-342-1340 is shown. To the right, there is a 'Energy Video' section with a thumbnail for an mp4 file (56k\_100k\_mp4) and a link to the Energy Hotline at (800)342-1340. At the bottom, there is a banner for the 'Tennessee Energy Division ANNUAL REPORT 2005-2006'.



# Energy Emergency Planning

**Energy Emergency Planning** was established by the Energy Division to encompass the activities pertinent to energy emergency preparedness. The Tennessee Emergency Management Agency (TEMA)

has established a framework for the development of a comprehensive emergency management plan for the State of Tennessee. The Energy Division's Petroleum Contingency Plan is a part of the ESF-12. The ESF-12 is under the 12 Emergency Support Functions (ESF) implemented under the Federal Response Plan (FRP) for federal assistance in the event of a disaster. Under TEMA's Plan, the Energy Division's role has been to comply with the Emergency Support Function-12/Energy. The Energy Division also maintains access to additional resources and databases that would need to be utilized in the event of an energy-related emergency.

In coordination with Energy Energy Division, the Local Planning Assistance Office Geographic Information System (GIS) had developed a digital cartographic base capable of geographically locating a wide range of information suitable for local planning and management applications. The county tax parcel mapping system was chosen for two reasons. First, each tax map is on the Tennessee State Plane

Coordinate System. And second, most features used in planning or management are easily located on the parcel base.

## STATE OF TENNESSEE PETROLEUM CONTINGENCY PLAN



Energy Division

Department of Economic and Community Development  
312 8th Avenue North, Wm. R. Snodgrass TN Tower 10th Floor  
Nashville, Tennessee 37243-0405  
(615) 741-2994  
(800) 342-1340

Revised December 9, 2005



**TEMA OPERATIONS**

The State of Tennessee has a state base mapping program creating digital tax maps because of the success in the Local Planning GIS program.



# **Clean Cities Program**

The Clean Cities Program is sponsored by the U.S. Department of Energy and was created to advance the use of cars and trucks powered by alternative fuels. The program promotes the purchase of alternative fuel vehicles and the expansion of the AFV-refueling infrastructure.

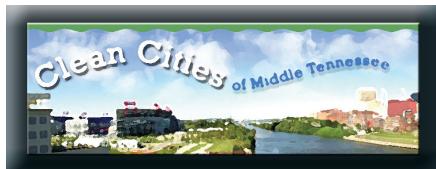
The program coordinators of each coalition meet with city/county local government officials, chamber of commerce officials, public & private fleet directors and fuel suppliers to market the Clean Cities programs and to advance use of alternative fuels. They also visit schools and present programs concerning the use of alternative fuels. They have worked extensively with Tennessee Farmer's CO-OP's, the Tennessee Farm Bureau and the Tennessee Soybean Council to promote alternative fuels.

## **There are currently 3 Clean Cities programs in Tennessee:**



### **East Tennessee Clean Fuels Coalition (ETCFC) -**

This coalition has been officially designated as a Clean City by the U.S. Department of Energy. Currently receives a \$20,000 Special Projects Grant from the Department of Energy for Administration.

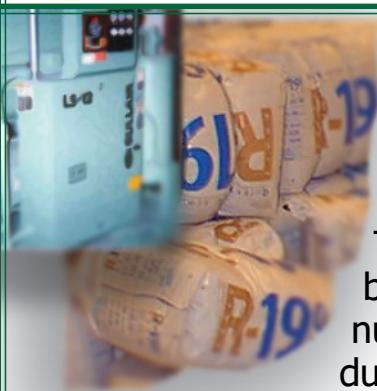


**Clean Cities of Middle Tennessee (CCMT) -** This coalition has been officially designated as a Clean City by the U.S. Department of Energy. Currently receives a \$20,000 Special Projects Grant from the Department of Energy for administration.



### **West Tennessee Clean Cities Coalition**

**(WTCCC) -** Granted administrative start-up funds of \$83,500 in October 2005 by ECD's Energy Division.



## ***Energy Related Business Started/Ceased***

The following chart lists the number of energy related new businesses that started activity during FY 2005-2006, and the number of energy related businesses that ceased operations during FY 2005-2006.

<b><u>Type of Business/Product</u></b>	<b><u>Began/Ceased</u></b>
Plumbing, heating, air conditioning .....	14/46
Masonry, other stonework .....	2/24
Plastering, drywall, insulation .....	1/10
Millwork .....	1/2
Converted paper products .....	0/0
Building paper and building board mills .....	0/0
Asphalt felts and coatings .....	0/0
Rubber products .....	0/0
Flat glass .....	0/0
Asbestos .....	0/0
Mineral wool .....	0/0
Heating equipment - electrical .....	1/1
Metal doors, sash, and trim .....	1/2
Fabricated plate work .....	1/1
Refrigeration and heating equipment .....	0/1
Electric housewares and fans .....	0/0
Semiconductors and related devices .....	0/0
Automatic temperature controls.....	0/1
Process control instruments .....	0/2
Instruments for measuring electricity .....	0/0
Construction materials .....	2/8
Warm air-heating, air conditioning .....	0/5
Lumber and building materials .....	7/17
Wholesale Trade - durable goods .....	1/5
Research and development laboratories .....	0/0
Management and public relations .....	0/0
<b>TOTALS.....</b>	<b>31/125</b>

(SOURCE: Tennessee Dept. of Labor and Workforce Development, 2006-07)

# ***Appendix***

# TENNESSEE ENERGY STATISTICS



*The selected information for the following report was obtained from the Energy Information Administration.  
For more detailed information, you can go to: <http://www.eia.doe.gov>*

# ENERGY RESOURCES

TENNESSEE PRIMARY ENERGY RESOURCES	2006 TOTALS	MILLION Btu	% OF TOTAL Btu
COAL	2,804,000 short tons	61,441,248	14.7%
CRUDE OIL	261,575 barrels	1,517,135	.4%
NATURAL GAS	2,662,584 Mcf	2,242,461	.6%
NUCLEAR	24,679 MWh	266,755,311	63.9%
HYDROELECTRIC	7,801 MWh	80,654,539	19.3%
OTHER <sup>(1)</sup>	451 MWh	4,662,889	1.1%
<b>TOTAL</b>		<b>417,273,583</b>	<b>100.0%</b>

(1) Other is renewables, and other miscellaneous energy sources

### Net Generation of Electricity by Primary Energy Source

Year to Date  
(Thousand Megawatthours)

	<u>Year 2001</u>	<u>Year 2002</u>	<u>Year 2003</u>	<u>Year 2004</u>	<u>Year 2005</u>	<u>Year 2006</u>
Coal	59,730	59,706	54,921	58,317	59,277	60,856
Petroleum	400	270	406	190	231	159
Natural Gas	456	470	627	301	536	644
Nuclear	28,576	27,574	24,153	28,612	27,803	24,679
Hydroelectric	6,213	7,278	11,275	9,590	8,712	7,801
Other Renewable	829	802	832	584	559	451
Other	0	3	5	0	0	0
All Sectors	96,222	96,114	92,222	97,595	97,117	93,922

### Retail Sales of Electricity to Ultimate Consumers by Sector

Year to Date  
(Million Kilwatthours)

	<u>Residential</u>	<u>Commerical</u>	<u>Industrial</u>	<u>Transportation</u>	<u>All Sectors</u>
Year 2001	37,316	26,318	32,356	na	97,082
Year 2002	38,752	26,523	31,845	na	98,233
Year 2003	37,697	27,481	32,278	na	97,456
Year 2004	38,526	28,249	32,885	1,038	99,661
Year 2005	41,132	29,146	33,625	1,309	103,905
Year 2006	40,895	29,077	32,853	1,000	102,826

### Average Retail Price of Electricity to Ultimate Consumer by Sector

Year to Date  
(Cents per Kilwatthours)

	<u>Residential</u>	<u>Commerical</u>	<u>Industrial</u>	<u>Transportation</u>	<u>All Sectors</u>
Year 2001	6.32	6.31	4.12	na	5.62
Year 2002	6.41	6.45	4.15	na	5.72
Year 2003	6.55	6.57	4.29	na	5.84
Year 2004	6.90	7.05	4.46	11.75	6.14
Year 2005	6.89	7.17	4.73	11.46	6.31
Year 2006	7.74	8.00	5.35	11.18	7.05

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## Gasoline Prices for Tennessee

(Dollars/Gallon - Tax Excluded)

<u>2006</u>	<u>Regular</u>	<u>Midgrade</u>	<u>Premium</u>
December	1.789	1.899	2.007
November	1.693	1.801	1.907
October	1.690	1.803	1.913
September	1.943	2.070	2.175
August	2.402	2.528	2.621
July	2.414	2.525	2.627
June	2.292	2.407	2.506
May	2.307	2.424	2.516
April	2.310	2.417	2.515
March	1.938	2.040	2.139
February	1.773	1.582	1.977
January	1.826	1.932	2.027
2005 Average	1.807	1.877	1.988
2004 Average	1.344	1.435	1.525
2003 Average	1.037	1.133	1.214
2002 Average	.863	.955	1.036
2001 Average	.921	1.018	1.076

## Refiner Motor Gasoline Volumes - Tennessee

(Thousand Gallons per Day)

	<u>Regular</u>	<u>Midgrade</u>	<u>Premium</u>	<u>All Grades</u>
Average 2006	7,353.3	402.2	923.5	8,680.9
Average 2005	7,322.7	488.6	943.0	8,754.2
Average 2004	7,220.2	607.7	1,080.1	8,907.9
Average 2003	6,833.7	781.3	1,215.8	8830.8
Average 2002	7,056.4	857.9	1,419.1	9,333.4
Average 2001	7,283.1	944.5	1,441.2	9,668.8

## Tennessee Oil Production by County

(BBLS)

	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Overton -	160,412	94,915	102,331	119,447	154,507	84,154
Scott -	48,683	56,084	58,855	58,584	51,814	49,963
Morgan -	45,147	53,754	55,040	57,715	35,191	26,162
Pickett -	39,091	32,314	40,241	44,848	25,669	31,317
Fentress -	31,920	21,721	30,014	32,108	21,786	27,217
Hancock -	26,281	20,027	26,841	13,951	13,917	17,212
Campbell -	15,736	18,763	24,284	13,503	9,044	15,416
Claiborne -	15,691	13,398	14,547	11,606	8,427	7,161
Anderson -	1,896	3,802	6,528	9,551	4,946	1,522
Clay -	1,076	1,032	745	465	785	1,166
Cumberland -	414	424	375	Clay -	224	203
Rhea -	81		Robertson -	123	Franklin -	168
					Robertson -	82

# Natural Gas

## Natural Gas Consumption - Tennessee (Million Cubic Feet)

	<u>Residential</u>	<u>Commerical</u>	<u>Industrial</u>
Year 2001	68,053	53,010	118,566
Year 2002	69,330	53,710	118,241
Year 2003	69,746	56,576	112,446
Year 2004	65,331	54,201	98,701
Year 2005	66,250	54,264	94,855
Year 2006	61,096	51,247	92,579

## Average Price for Natural Gas - Tennessee (Dollars per Thousand Cubic Feet)

	<u>Residential</u>	<u>Commerical</u>	<u>Industrial</u>
Year 2001	10.16	9.40	6.85
Year 2002	8.15	7.37	5.34
Year 2003	9.66	8.86	6.33
Year 2004	10.60	9.51	7.44
Year 2005	13.50	12.47	10.06
Year 2006	14.60	12.85	9.76

## Tennessee Natural Gas Production by County (MCF)

<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Hancock - 979,470	Hancock - 765,429	Hancock - 461,953	Anderson - 684,673	Anderson - 813,297	Anderson - 941,165
Claiborne - 351,583	Claiborne - 354,221	Claiborne - 322,070	Morgan - 400,057	Morgan - 401,522	Morgan - 717,351
Morgan - 280,191	Morgan - 278,031	Morgan - 290,250	Hancock - 306,226	Hancock - 291,477	Scott - 299,711
Scott - 245,831	Campbell - 267,242	Campbell - 272,501	Claiborne - 271,731	Claiborne - 231,678	Claiborne - 271,083
Anderson - 79,251	Scott - 256,939	Scott - 215,137	Campbell - 232,203	Scott - 219,858	Campbell - 203,538
Fentress - 46,422	Anderson - 80,133	Anderson - 199,966	Scott - 210,025	Campbell - 201,895	Hancock - 187,345
Campbell - 20,064	Fentress - 49,238	Fentress - 40,654	Fentress - 41,066	Fentress - 42,899	Fentress - 27,006
				Overton - 9,865	Overton - 14,712
				Roane - 1,027	Roane - 673

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### Coal Consumption - Tennessee (Thousand Short Tons)

	<u>Electric Power</u>	<u>Other Industrial Plants</u>	<u>Residential &amp; Commerical</u>
Year 2001	24,487	3,575	140
Year 2002	24,630	3,340	64
Year 2003	23,189	3,354	134
Year 2004	24,832	3,233	70
Year 2005	26,119	3,149	32
Year 2006	27,216	3,018	14

### Average Coal Price Delivered - Tennessee (Dollars per Short Ton)

	<u>Electric Utility Plants</u>	<u>Other Industrial Plants</u>
Year 2001	28.31	38.18
Year 2002	27.73	40.17
Year 2003	28.15	39.10
Year 2004	30.27	49.25
Year 2005	33.14	63.09
Year 2006	36.22	66.90

### Tennessee Coal Production by County - 2006 (Thousand Short Tons)

	<u>Underground</u>		<u>Surface</u>	
	Number of Mines	Production	Number of Mines	Production
Anderson	1	27	2	72
Campbell	4	486	2	305
Claiborne	4	666	8	1,236
Cumberland	1	13	0	0
Morgan	0	0	1	1

# Glossary

- Barrel:** A liquid measure of oil, usually crude, equal to 42 U.S. gallons or 280-380 pounds depending upon API Gravity and equal to 35 British Imperial gallons.
- Bituminous Coal:** A coal that is high in carbonaceous matter having a volatility greater than anthracite and a calorific value greater than lignite. In the United States, it is often referred to as soft coal. It is used primarily for electricity generation, coke production, and space heating.
- British Thermal Units (Btu):** The quantity of heat necessary to raise the temperature of one pound of water one degree Fahrenheit.
- Coke:** A porous, solid residue resulting from the incomplete combustion of coal heated in a closed chamber, or oven, with a limited supply of air. Coke is largely carbon and is a desirable fuel in certain metallurgical industries.
- Cubic Foot:** The most common unit of measurement of gas volume of one cubic foot under stated conditions of temperature, pressures, and water vapor.
- Energy:** The capacity for doing work. Electric energy is measured in watthours (wh) and heat energy is generally measured in British thermal units (Btu). One form of energy may be changed to another such as burning coal to produce steam to drive a turbine which produces electricity.
- Energy Flow:** The series of steps involved in supplying fuels for use, including exploration, mining, transformation, distribution, and consumption.
- Kilowatt-hour:** The amount of energy equal to one kilowatt in one hour; equivalent to 3,412 Btu.
- Liquefied Petroleum Gas:** A gas containing certain specific hydrocarbons that are gaseous under normal atmosphere conditions, but can be liquefied under moderate pressure at normal temperatures.
- Prime Mover:** The engine, turbine, water wheel or similar machine which drives an electric generator.
- Pumped-Storage:** A hydroelectric plant which generates electricity during peak load periods usually by using water previously pumped into a storage reservoir during off-peak periods.
- Ton/Short Ton:** A unit of weight equal to 2,000 pounds.
- Turbine:** A fluid acceleration machine for generating rotary mechanical power from the energy in a stream of fluid.

# Conversion Factors

<b>Bituminous Coal</b>	
Production .....	21.912 Million Btu/short ton
Consumption .....	21.467 Million Btu/short ton
<b>Butane</b> .....	103,000 Btu/gallon
<b>Crude Oil</b>	
Production .....	5.800 Million Btu/barrel
Imports .....	5.903 Million Btu/barrel
<b>Diesel Fuel</b> .....	138,690 Btu/gallon
<b>Electricity</b>	
Fossil fuel steam-electric power plant generation* .....	10,339 Btu/kilowatt-hour
Nuclear power plant generation .....	10,809 Btu/kilowatt-hour
Electricity consumption .....	3,412 Btu/kilowatt-hour
<b>Kerosene</b> .....	135,000 Btu/gallon
<b>Lubricants</b> .....	144,404 Btu/gallon
<b>LPG</b> .....	86,666 Btu/gallon
<b>Motor Gasoline</b> .....	125,071 Btu/gallon
<b>Natural Gas</b>	
Production .....	1,030 Btu/cubic foot
Consumption .....	1,030 Btu/cubic foot
<b>Propane</b> .....	91,333 Btu/gallon
<b>Residual fuel oil</b> .....	149,690 Btu/gallon

\* This thermal conversion factor is used for hydroelectric power generation and for wood and waste, wind, photovoltaic, and solar thermal energy consumed at electric utilities.

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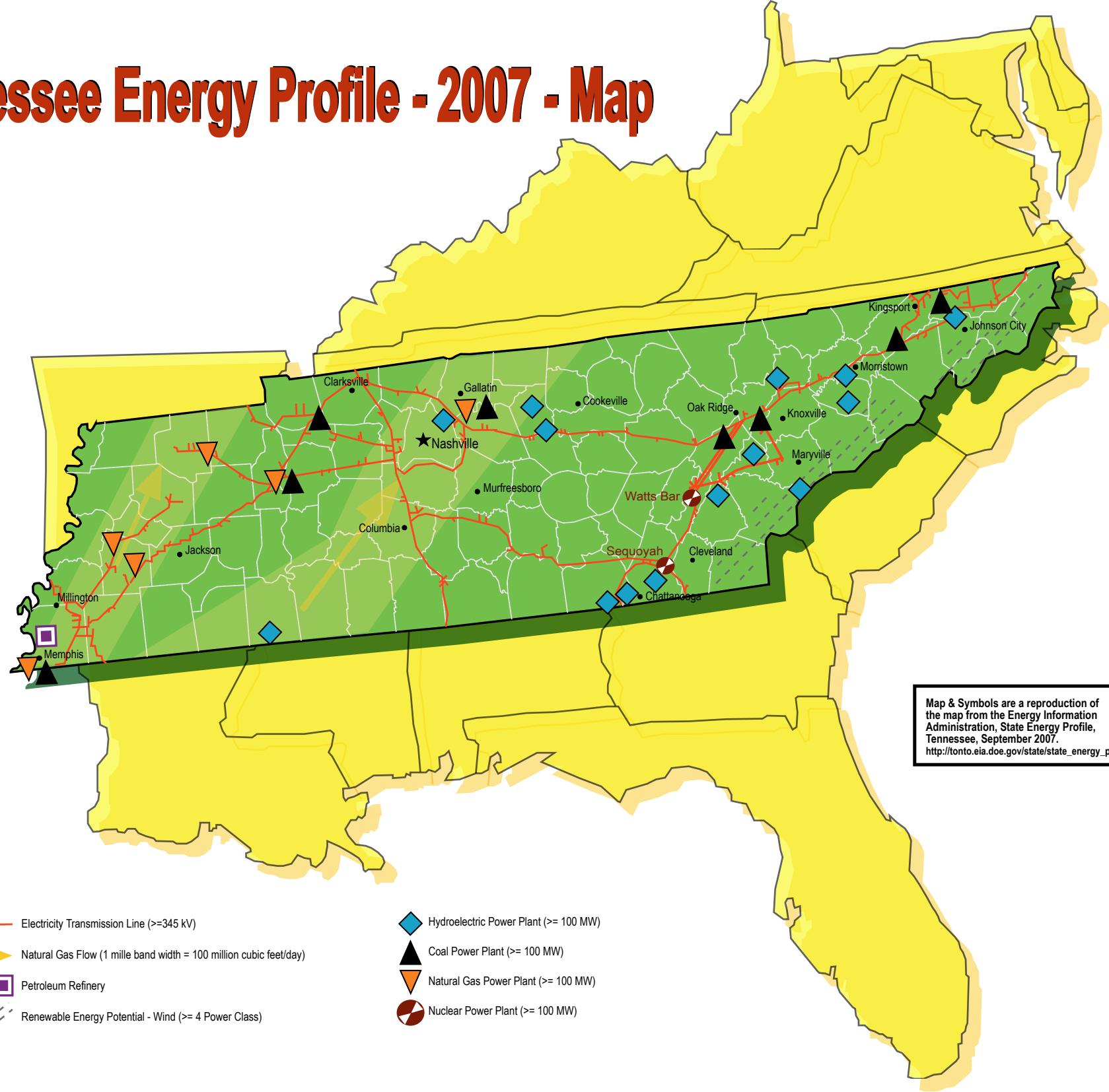
**Coal**

1 metric ton	contains	1,000 kilograms or 2,204.62 pounds
1 long ton	contains	2,240 pounds
1 short ton	contains	2,000 pounds

**Crude Oil (Average Gravity)**

1 barrel	contains	42 gallons
1 barrel	contains	0.136 metric tons (0.150 short tons)
1 metric ton	contains	7.33 barrels
1 short ton	contains	6.65 barrels

# Tennessee Energy Profile - 2007 - Map



# **Energy Division**

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